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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/685,838	10/10/2000	Bruce Wayne Moore	RSW9-2000-0053	4600

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EXAMINER	
GRAHAM, CLEMENT B	
ART UNIT	**PAPER NUMBER**
3628	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/685,838	MOORE ET AL.	
	Examiner	Art Unit	
	Clement B. Graham	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *34 and 35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-33, has been deleted and claims 34-35 has been added.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 34-35, are rejected under 35 U.S.C. 103(a) as being unpatentable over Graefe et al (Hereinafter Graefe U.S. Patent No. 5, 822, 747) in view of Hausman et al (Hereinafter Hausman U.S Patent 6, 086, 619.

As per claim 34, Graefe discloses a computer-implemented method for solving a current portfolio optimization problem comprising the steps of:
Storing("i. e, database server") on a computer, a plurality of data groups("i. e, data structures") each associated with one of a plurality of anticipate portfolio optimization problems ("i. e, input queries") (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) each of the data groups including optimal solutions ("i. e, generating plan") to a corresponding anticipated portfolio optimization problem, each of the data groups further including input values and intermediate calculation values associate with the corresponding anticipated portfolio optimization problem (see column 19 lines 35-43 and column 4 lines 30-67 and column 5 lines 1-20) pre-solving("i. e, generating solution to each sub-problem" see column 2 lines 30-65) using said computer, the plurality of anticipated portfolio optimization problems(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) and compiling, using said computer, the plurality of data groups based on the results of the pre-solving step (see column 19 lines 35-43) preparing and storing(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) on said computer, a plurality of look-up tables("i. e, database tables") for identifying each of the plurality of data groups,

the plurality of look-up tables containing equation names.(see column 4 lines 15-29 and column 10 lines 58-67 and column 11 lines 1-14) RHS (Right Hand Side) values, and objective values pertaining to le plurality or anticipate portfolio optimization problems (see column 10 lines 58-67 and column 11 lines 1-14) solving, using said computer, the current portfolio optimization problem using the stored data groups the solving step including the steps of:

selecting, using user-defined functions, at least one of the stored plurality of data groups using the look-up tables (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines 58-67 and column 11 lines 1-14) and determining whether or not the selected data group contains optimal solutions to the current portfolio optimization problem (see column 3 line 65 and column 4 lines 5-35) wherein, if the determining step determines the selected data group contains optimal solutions to the current portfolio optimization problem, then the optimal solutions included in the selected data group are output as optimal solutions to the current portfolio optimization problem(Note abstract and see column 1 line 65 and column 4 lines 5-65 and column 5 lines 1-20) and wherein, if the determining step determines that the selected data group does not contain optimal solutions to the current portfolio optimization problem, then the selected data group is modified using a search method, and the current portfolio optimization problem is iteratively solved using the modified data group to obtain optimal solutions to the current problem.(see column 3 line 65 and column 4 lines 51-35).

Graefe fail to explicitly teach financial.

However Hausman discloses the QUADCOSTS construct allows the modeler to specify quadratic cost elements or bilinear cost elements which are proportional to the product of two (possibly non-unique) specified flows. Use of this capability allows representation of risk adjusted return optimization problems, e.g., portfolio optimization subject to linear constraints. Other example QUADCOST uses include production problems where unit price decreases linearly with the quantity produced, production problems where unit price decreases or remains constant with increases in production of other products (substitutability among products), production problems where unit cost

of an input resource decreases linearly as the quantity of the resource is increased; etc.(see column 10 lines 46-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Graefe to include financial taught by Hausman in order to perform optimization on a financial portfolio.

As per claim 35, Graefe discloses a system for solving a current portfolio optimization problem comprising.
a storage unit("i. e, database server") in a computer, storing a plurality of data groups("i. e, data structures") each associated with one of a plurality of anticipated portfolio optimization problem (i. e, input queries") (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) each of the data groups including optimal solutions to a corresponding anticipated portfolio optimization problem ("i. e, generating plan") each of the data groups further including input values and intermediate calculation values associated with the corresponding anticipated portfolio optimization problem (see column 19 lines 35-43 and column 4 lines 30-67 and column 5 lines 1-20) and an optimization unit in said computer, said optimization comprising:
means for pre-solving the plurality of anticipated portfolio optimization problems ("i. e, generating solution to each sub-problem" see column 2 lines 30-65)

means for compiling the plurality of data groups based on the results of the pre-solving(see column 19 lines 35-43) means for preparing and storing (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) a plurality of look-up tables for identifying each of the plurality of data groups. the plurality of look-up tables containing equation names.(see column 4 lines 15-29 and column 10 lines 58-67 and column 11 lines 1-14) RHS (Right Hand Side) values, and objectives values pertaining to the plurality of anticipated portfolio optimization problems (see column 10 lines 58-67 and column 11 lines 1-14) means for solving the current

portfolio optimization problem using the stored data groups , the solving means including:
means for selecting, using user-defined functions, at least one of the stored plurality of data groups using the look-up tables(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines 58-67 and column 11 lines 1-14) and means for determining whether or not the selected data group contains optimal solutions to the current portfolio optimization problem (see column 3 line 65 and column 4 lines 5-35) wherein, if the determining means determines that the selected data group contains optimal solutions to the current portfolio optimization problem, then the optimal solutions included in the selected data group are output as optimal solutions to the current portfolio optimization problem .(see column 3 line 65 and column 4 lines 51-35) and wherein if the determining means determines that the selected data group does not contain optimal solutions to the current portfolio optimization problem, then the selected data group is modified using a search method, and the current portfolio optimization problem iteratively solve using the modified data group to obtain optimal solutions to the current problem.(see column 3 line 65 and column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20). Graefe fail to explicitly teach financial.

However Hausman discloses Netcore is a method, implemented in software, for efficiently expressing optimization problems which can be solved with network, linear, integer, mixed integer linear, and quadratic programming techniques. Every Netcore representation of a problem may include a network, linear, integer, mixed integer, or mixed integer linear programming problem where each integer variable has a finite number of possible values and with optional quadratic and bilinear terms in the objective function (hereinafter collectively referred to as MILPQ programs); it can also be proven rigorously that every MILPQ program can be expressed in Netcore. The Netcore representation uses directed graphs and associated data with certain numeric fields for the nodes and links, and a few simple but powerful constraint mechanisms.(see column 4 lines 2-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Graefe to include financial taught by Hausman in order to perform optimization on a financial portfolio.

Conclusion

RESPONSE TO ARGUMENTS

4. Applicant's arguments files on 04/14/2005 have been fully considered but they are not persuasive for the following reasons.

5. In response to applicant's arguments regarding Graefe and Hausman.

6. In response to Applicant's arguments that Graefe and Hausman fail to teach or suggest "the Applicant's claimed limitations" the examiner disagree because these Graefe discloses a computer-implemented method for solving a current portfolio optimization problem comprising the steps of:

Storing("i. e, database server") on a computer, a plurality of data groups("i. e, data structures") each associated with one of a plurality of anticipate portfolio optimization problems ("i. e, input queries") (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) each of the data groups including optimal solutions ("i. e, generating plan") to a corresponding anticipated portfolio optimization problem, each of the data groups further including input values and intermediate calculation values associate with the corresponding anticipated portfolio optimization problem (see column 19 lines 35-43 and column 4 lines 30-67 and column 5 lines 1-20)

pre-solving("i. e, generating solution to each sub-problem" see column 2 lines 30-65) using said computer, the plurality of anticipated portfolio optimization problems(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) and

compiling, using said computer, the plurality of data groups based on the results of the pre-solving step (see column 19 lines 35-43)

preparing and storing(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) on said computer, a plurality of look-up tables("i. e, database tables") for identifying each of the plurality of data groups, the

plurality of look-up tables containing equation names.(see column 4 lines 15-29 and column 10 lines 58-67 and column 11 lines 1-14)
RHS (Right Hand Side) values, and objective values pertaining to le plurality or anticipate portfolio optimization problems (see column 10 lines 58-67 and column 11 lines 1-14) solving, using said computer, the current portfolio optimization problem using the stored data groups the solving step including the steps of:
selecting, using user-defined functions, at least one of the stored plurality of data groups using the look-up tables (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines 58-67 and column 11 lines 1-14) and determining whether or not the selected data group contains optimal solutions to the current portfolio optimization problem (see column 3 line 65 and column 4 lines 5-35) wherein, if the determining step determines the selected data group contains optimal solutions to the current portfolio optimization problem, then the optimal solutions included in the selected data group are output as optimal solutions to the current portfolio optimization problem(Note abstract and see column 1 line 65 and column 4 lines 5-65 and column 5 lines 1-20) and
wherein, if the determining step determines that the selected data group does not contain optimal solutions to the current portfolio optimization problem, then the selected data group is modified using a search method, and the current portfolio optimization problem is iteratively solved using the modified data group to obtain optimal solutions to the current problem.(see column 3 line 65 and column 4 lines 51-35).
However Hausman discloses the QUADCOSTS construct allows the modeler to specify quadratic cost elements or bilinear cost elements which are proportional to the product of two (possibly non-unique) specified flows. Use of this capability allows representation of risk adjusted return optimization problems, e.g., portfolio optimization subject to linear constraints. Other example QUADCOST uses include production problems where unit price decreases linearly with the quantity produced, production problems where unit price decreases or remains constant with increases in production of other products (substitutability among products), production problems where unit cost

of an input resource decreases linearly as the quantity of the resource is increased; etc.(see column 10 lines 46-58).

Therefore it is obviously clear that Applicant's claimed limitations were addressed within the teachings of Graefe and Hausman.

7. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clement B Graham whose telephone number is 703-305-1874. The examiner can normally be reached on 7am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 703-308-0505. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-0040 for regular communications and 703-305-0040 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

CG

June 17, 2005

FRANTZY POINVIL
PRIMARY EXAMINER
AU 3628